

UNITED STATES PATENT OFFICE.

JOSEPH D. McNUTT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WINCHESTER REPEATING ARMS COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF DELAWARE.

MERCURY FULMINATE AND METHOD OF TREATING SAME.

No Drawing.

Application filed July 13, 1928. Serial No. 292,801.

My invention relates to mercury fulminate and methods of treating the same.

The object of this invention is the production of mercury fulminate which will not have any harmful effect on metal with which it comes in contact.

Mercury fulminate is used largely as a detonating agent in priming compounds of ammunition. As the mercury fulminate heretofore used for this purpose contained free mercury in varying amounts, trouble has been experienced in the past due to the tendency of the metallic components of the ammunition, upon storage for a greater or less length of time, to take up mercury from the priming charge and become amalgamated with it. This causes the metal to become more or less brittle and at times this trouble is experienced to such an extent that the metal components of the ammunition crack or fall apart. The use of commercial mercury fulminate in the priming charges of ammunition has proved so troublesome at times in the past that attempts have been made to develop priming compounds of the non-fulminate type in order to obviate this difficulty.

By means of the process of this invention I produce mercury fulminate containing substantially no free metallic mercury and this material is used in priming mixtures with all the advantages heretofore possible with priming mixtures of the non-fulminate type and at the same time with the benefit of the use of mercury fulminate which is by far the most satisfactory detonating ingredient. The mercury fulminate treated according to my process and from which all free mercury has been removed is used in a priming mixture in combination with a suitable oxidizing agent and other well known ingredients of such compositions in the usual manner as will be readily understood by those skilled in the art.

In carrying out the process and producing the product of my invention I employ ordinary commercial mercury fulminate and heat it to remove any free metallic mercury which may be present. The time and temperature of heating will vary according to the quality of the mercury fulminate treated. I preferably carry out the heating step under reduced pressure, but this is not essential. By performing the heating step under reduced pressure the time consumed may be considerably shortened. With the usual grade

of commercial mercury fulminate now employed by various ammunition manufacturers in the manufacture of priming compounds I have found that the optimum conditions comprise a heating period of substantially sixteen hours at a temperature of 140° F. and at a pressure corresponding to four inches of mercury.

The mercury fulminate so treated to remove substantially all of the free metallic mercury present is then combined with a suitable oxidizing agent and other ingredients of a priming mixture and the priming mixture is mixed and charged into primer cups or cartridge cases for rim fire cartridges in a manner well known to those skilled in the art.

By using mercury fulminate substantially free of metallic mercury the amalgamation of the metallic components of the ammunition is greatly diminished, if not entirely obviated. This amalgamation is primarily, if not entirely, due to the presence of free or elemental mercury in the commercial mercury fulminate ordinarily used in the preparation of priming mixtures. Ammunition loaded with priming mixtures containing mercury fulminate prepared in accordance with my invention will not show any appreciable amalgamation even after a considerable time of storage thereby eliminating the most prevalent difficulty and annoyance in the use of mercury fulminate.

Although I have pointed out above specific values for length of time, temperature and pressure, nevertheless I do not confine myself to these precise figures, nor indeed to the necessity for reduced pressure inasmuch as these values may be varied to a considerable extent without departing from the spirit of my invention, which is characterized by the use of mercury fulminate from which free metallic mercury has been removed.

I claim:

1. Mercury fulminate which has been freed from elemental mercury by heating.
2. Mercury fulminate which has been freed from elemental mercury by the influence of heat and reduced pressure.
3. Mercury fulminate which has been freed from elemental mercury by being subjected to a temperature of 140° F. for a period of substantially sixteen hours.
4. The process of treating mercury fulminate consisting essentially of subjecting it

to a temperature sufficient to evaporate any free metallic mercury present for a sufficient length of time to eliminate substantially all of such free mercury. 15

5 5. The process of treating mercury fulminate consisting essentially of subjecting it to a temperature sufficient to evaporate any free metallic mercury present for a sufficient length of time to eliminate substantially all of such free mercury and under a diminished pressure. 20

6. The process of treating mercury ful-

minate consisting essentially of subjecting it to a temperature of substantially 140° F. for a period of substantially sixteen hours.

7. The process of treating mercury fulminate consisting essentially of subjecting it to a temperature of substantially 140° F. for a period of substantially sixteen hours under a diminished pressure corresponding to substantially four inches of mercury.

In testimony whereof I affix my signature.

JOSEPH D. McNUTT